

Bioresorbable Occlusion Device for Congenital Heart Defects

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Technology description

BIORESORBABLE OCCLUSION DEVICE FOR CARDIOVASCULAR DEFECTS CONGENITAL HEART DEFECTS AND CURRENT TREATMENT CHALLENGES Congenital heart defects are the most common type of birth defect. They affect eight out of every 1,000 newborns. Each year, more than 35,000 babies in the United States are born with congenital heart defects. A septal defect, or "hole in the heart" can occur between the atria or the ventricles. Patent ductus arteriosus (PDA) is a fairly common heart defect that can occur soon after birth. In PDA, abnormal blood flow occurs between the aorta and the pulmonary artery. With advances in diagnostic and catheter methods, it has become possible to close these defects with minimally invasive medical devices. **SELF-CENTERING, BIORESORBABLE, OCCLUSION DEVICE** Current closure devices generally contain metallic features to provide shape support. These can erode into surrounding tissue and corrode over the 70 year potential lifetime of the device. Newer devices include self-centering features to reduce the potential for residual leaks and provide complete occlusion of the defect. However due to the presence of metallic wires these devices are bulky and can cause unintended flow disruptions. A solution for this problem is a non-metallic closure device. A device has been developed that can self-center, completely occlude defects, and be retrieved back to the catheter in the event of sub-optimal deployment. The device is designed to be bioresorbable and has no metallic components. This simplifies the manufacturing of the device and allows the device to degrade over time and be replaced by natural fibrous tissue in the body. This is the ideal solution for these defects; a temporary device that is resorbed by the body and replaced with native tissue. This device is a polymer-based, self-centering, bioresorbable occlusion device for congenital cardiovascular defects. These defects include atrial septal defects, ventricular septal defects, patent ductus arteriosii, patent foramen ovale, and arterial punctures. Current methods for treating these problems include metallic parts that cause the device to be bulky and difficult to retrieve. By using a bioresorbable material, the implant can be eventually be replaced by native fibrous tissue and completely occlude the defect.

Advantages

Designed to work with all types of heart defects in the cardiovascular system such as atrial septal defects, ventricular septal defects, patent ductus arteriosus and patent foramen ovale in addition to

closing arterial puncture sites, reducing hospital inventory and simplifying the implant procedure. Bioresorbable elements are eventually replaced by native tissues, leading to a more physiologic solution and minimizing long term adverse events. Completely self-centering, to help blood shunting around the device

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